EARTH SATELLITE CORPORATION
(EarthSat)

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20 September 1972

E72-10145
CR-127330

ERTS Contracting Officer
Code 245, GSFC
Greenbelt, Maryland 20771

Dear Sir:

Our first Type I Progress Report under our ERTS-1 project "A Scheme for the Uniform Mapping and Monitoring of Earth Resources and Environmental Complexes Using ERTS-1 Imagery", GSFC ID No. PR-534 is enclosed.

We were ready to receive data, had completed a ground-truth mission, arranged local cooperation at distant test sites, and did in fact make good and effective use of the first ERTS-1 data immediately upon receipt.

Our first ERTS data under this project were received for one of our four test sites on 22 August 1972. It was used for a surface ground-truth mission on 25 & 26 August

Yours very truly,

Charles E. Poulton
Principal Associate
Range Resources and Ecology

Enclosure:

(E72-10145) A SCHEME FOR THE UNIFORM MAPPING AND MONITORING OF EARTH RESOURCES AND ENVIRONMENTAL COMPLEXES C.E. Poulton, et al (Earth Satellite Corp., Berkeley, Calif.) 20 Sep. 1972 6 p CSCL 08B G3/13

N72-33304

Unclas 00145

September 20, 1972

ERTS Contracting Officer
Code 245, GSFC
Greenbelt, Maryland 20771

Subject: Type I Progress Report No. 1

Period Covered: 15 June 1972 - 31 August 1972

Title: A Scheme for the Uniform Mapping and Monitoring of Earth Resources and Environmental Complexes Using ERTS-1 Imagery

GSFC ID: PR 534

Objectives: To develop, test and specify a practical procedure and system for the uniform mapping and monitoring of natural ecosystems and environmental complexes from space-acquired imagery.

With primary emphasis on ERTS-A imagery, but supported by appropriate aircraft photography as necessary, our objective furthermore is to accomplish the following:

1. Develop and test in a few selected areas of the western United States a standard format for an ecological and land use legend for making natural resource inventories on a simulated global basis.

2. Based on these same limited geographic areas identify the potentialities and limitations of the legend concept for the recognition and annotation of ecological analogs and environmental complexes.

An additional objective is to determine the optimum combination of space photography, aerial photography, ground data, human data analysis and automatic data analysis for estimating crop yield in the rice growing

areas of California and Louisiana.

Major Accomplishments: Main accomplishments in this reporting period were:

a) Staffing and preparation to receive data.

b) Completed ground truth and support oblique aircraft photo mission of all test sites. Took aerial support photos. Also recorded notes appropriate to objectives of project while flying over test sites. These are indexed for effective reference.

c) Arranged for significant cooperation at the distant test sites (Coastal Plain, La., and Colorado Plateau) and obtained ground truth maps and assistance from local experiment stations and federal agencies.

d) Adapted a legend from previous work of the PI and tested same with good results on the above ground-truth mission. The legend in its present form treats only the broad categories appropriate to interpretation of space-imagery. The ecological units are identified on physiognomic and structural characteristics only. Identification of some vegetation analogs on floristic characteristics from the ERTS-1 imagery seems likely where ground data are adequate. This hypothesis remains to be tested.

End-lap stero with RBV was found beneficial in making interpretations. As theory suggests, end-lap stereo with MSS is really not possible but some gain from binocular reinforcement was noted.

We will be seeking to identify and locate image areas representative

of native vegetation analogs and to study their image characteristics. As aircraft data are received, we will use it to refine our analog definition and location of candidate calibration areas on the ERTS-1 imagery. As data are received for new test sites the process will be repeated. At this time of year we anticipate little temporal change in signatures except in deciduous tree and shrub types. We will watch for appearance of these associated image characteristics as the fall and winter season sets in.

Problems: As of 31 August 1972 no significant problems were impeding progress. We had received first ERTS-1 data as required for two test sites, Sierra-Lahontan and Northern Great Valley. This enabled us to gain initial familiarization with both RBV and MSS data in B & W photographic mode. It exceeded expectations as to resolution, and, with exception of one set of negatives, the MSS had excellent tone quality. The RBV was less satisfactory as definition was almost completely lost in some dark areas.

Support aircraft imagery has been slow in coming, but we assume NASA will catch up on this soon. As an aid in identifying analog areas, the aircraft data will be very important.

Publications: none

Recommendations: All visual image interpreters should look for significant gains in useability from side-lap stereo at northerly latitudes.

Standing order: no changes

Image Descriptor Forms: Attached

Data Request Forms: None

Schedule: A delay in receiving ERTS-1 imagery has caused problems in adhering to projected schedule to perform interpretation of each test site early in the study. We hope to receive imagery in the next reporting period.

Funding: It is anticipated that data tapes will be needed for work we plan to do at a later date. We will consider the need for additional funding for work not scheduled in computer analysis of data tapes. No change in funding for scheduled work is anticipated at this time.

Personnel: No change.

Plans for next reporting period: Continuing analysis of ERTS-1 imagery and aircraft photos is planned following receipt of imagery.

Data will be collected and catalogued for use in classifying lands in each test area from cooperating agencies.

Report prepared by

Charles E. Poulton and
Robin I. Welch
EARTH SATELLITE CORPORATION
Berkeley, California

(See Instructions on Back)

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DATE September 26, 1972

PRINCIPAL INVESTIGATOR Dr. Charles Poulton

GSFC PR-534

ORGANIZATION EARTH SATELLITE CORPORATION

PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
	Lake	Conif.For.	Desert	
1Ø02-18125-XA	X	X	X	Playa Lake Agriculture Rangeland Sagebrush Desert Plant Community
1Ø02-1827-XA				Rivers Highways Urban Areas

*FOR DESCRIPTORS WHICH WILL OCCUR FREQUENTLY, WRITE THE DESCRIPTOR TERMS IN THESE COLUMN HEADING SPACES NOW AND USE A CHECK (✓) MARK IN THE APPROPRIATE PRODUCT ID LINES. (FOR OTHER DESCRIPTORS, WRITE THE TERM UNDER THE DESCRIPTORS COLUMN).

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GSFC 37-2 (7/72)